

CS125-45

MAY 29 1945

Prefabricated Homes

U. S. DEPARTMENT OF COMMERCE

HENRY A. WALLACE, Secretary

NATIONAL BUREAU OF STANDARDS

LYMAN J. BRIGGS, Director

*Reference book not to be  
taken from the library*

# PREFABRICATED HOMES

COMMERCIAL STANDARD CS125-45

Effective Date for New Production From May 10, 1945



A RECORDED VOLUNTARY STANDARD  
OF THE TRADE

UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1945

PROMULGATION  
of  
COMMERCIAL STANDARD CS125-45  
for  
PREFABRICATED HOMES

On September 27, 1944, at the instance of the Prefabricated Home Manufacturers' Institute, a proposed commercial standard for prefabricated homes was circulated to leading distributor and user organizations, Government agencies, and to manufacturers for comment. Following adjustment in the light of the comment, the recommended commercial standard was circulated on February 10, 1945, to the entire trade for written acceptance.

Those concerned have since accepted and approved the standard as shown herein for promulgation by the United States Department of Commerce, through the National Bureau of Standards.

The standard is effective for new production from May 10, 1945.

Promulgation recommended.

I. J. Fairchild,  
*Chief, Division of Trade Standards.*

Promulgated.

Lyman J. Briggs,  
*Director, National Bureau of Standards.*

Promulgation approved.

Henry A. Wallace,  
*Secretary of Commerce.*

## PREFABRICATED HOMES

### COMMERCIAL STANDARD CS125-45

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#### PURPOSE

1. The purpose of this standard is to establish a measure of quality for prefabricated homes.

#### SCOPE

2. This standard provides minimum requirements for one, one and a half, and two story prefabricated homes. It covers structural strength of the various component parts, requirements for light and ventilation, and recommended requirements for foundations, chimneys, heating, plumbing, insulation, and electrical wiring. It includes general requirements for material, workmanship as provided by the manufacturer, erection at site and assembly of prefabricated units, and protection during transportation and erection.

#### DEFINITION

3. A prefabricated home is one having floors, walls, ceilings, or roof composed of sections, or panels of varying sizes which have been fabricated prior to erection on the building foundation. This is in contrast to the conventionally built home which is constructed piece by piece on the site.

#### GENERAL REQUIREMENTS

4. *Workmanship.*—The workmanship in both fabrication and erection shall assure a completed dwelling that meets the requirements specified herein. The prefabricated sections or panels shall be manufactured within tolerances which shall assure site assembly and erection in accordance with the design requirements without difficulty or development of unanticipated stress. All corners and connections between panels and sections shall be made tight and true. Exposed exterior surfaces, joints, and connections shall be weathertight and durable.

5. *Materials.*—The materials shall be of commercial grades that are suitable for the purpose intended and shall conform to nationally recognized specifications and standards. All lumber shall be well seasoned. All plywood that will be exposed to the weather shall be of types suitable for exterior use.

6. *Protection.*—All panels and parts shall be protected from damage at all times prior to the completion of the building.

7. *Erection.*—The erection of the homes shall be in accordance with the detailed drawings and instructions of the manufacturer, which shall cover complete field assembly procedure, including connections of all shop fabricated components to each other and to any conventionally built elements. Any material, equipment, fixtures, panels, or parts that may be damaged during delivery or erection shall be replaced, if repair cannot be made to restore appearance and assure performance as required under this standard.

## DETAIL REQUIREMENTS

8. *Strength.*—The strength of all components and connections which cannot be determined by engineering analysis, when nationally recognized standards of structural design are used, shall be determined by tests. Components and connections which are identical to those analyzed or tested shall be considered to meet the same strength requirements as those determined by such analysis or tests. Tests shall be made in accordance with applicable, nationally recognized testing procedures, published by the American Standards Association, Forest Products Laboratory, the American Society for Testing Materials, or the National Bureau of Standards. The point of application of test loads and the location of supports shall conform to conditions encountered in the completed dwelling. Panels, connections, or other elements not subject to analysis by a generally recognized formula or by comparison with comparable assemblies shall be tested in triplicate. The panels and other elements tested shall be representative of commercial production and assembly and shall be accompanied by a complete, accurate, detailed description of the materials and the assembly procedure used. Panels and other elements tested for wind, snow, ceiling and floor loads shall sustain, without failure, for a period of 24 hours, a superimposed load equal to  $2\frac{1}{2}$  times the live load. Recovery within 24 hours, after removal of the full test load, shall be not less than 75 percent of the observed deflection. The measured deflection of any panel or element under full live load shall be not over one three-hundred-and-sixtieth of the clear span.

### 9. *Live loads.*

9a. *Floor and ceiling loads and wind loads.*—Loads on floors and ceilings, and wind loads shall comply with the requirements of Recommended Building Code Requirements for New Dwelling Construction BMS88, as issued by the National Bureau of Standards.

9b. *Snow and operating loads.*—All roofs shall be designed to carry a live load of not less than 20 pounds per square foot of horizontal projection, except that in areas having an average annual snowfall of more than 60 inches the live load shall be not less than 30 pounds per square foot.

### 10. *Connections.*

10a. *Floor, wall, and roof connections* shall be of adequate strength and stiffness to transfer the applied test loads from one connected panel to another without failure.

10b. *Floor to sill and sill to foundation connections* shall be designed to resist shear, uplift, and overturning without failure from application of lateral live loads. Two-thirds of the dead load of the building may be used in calculating resistance.

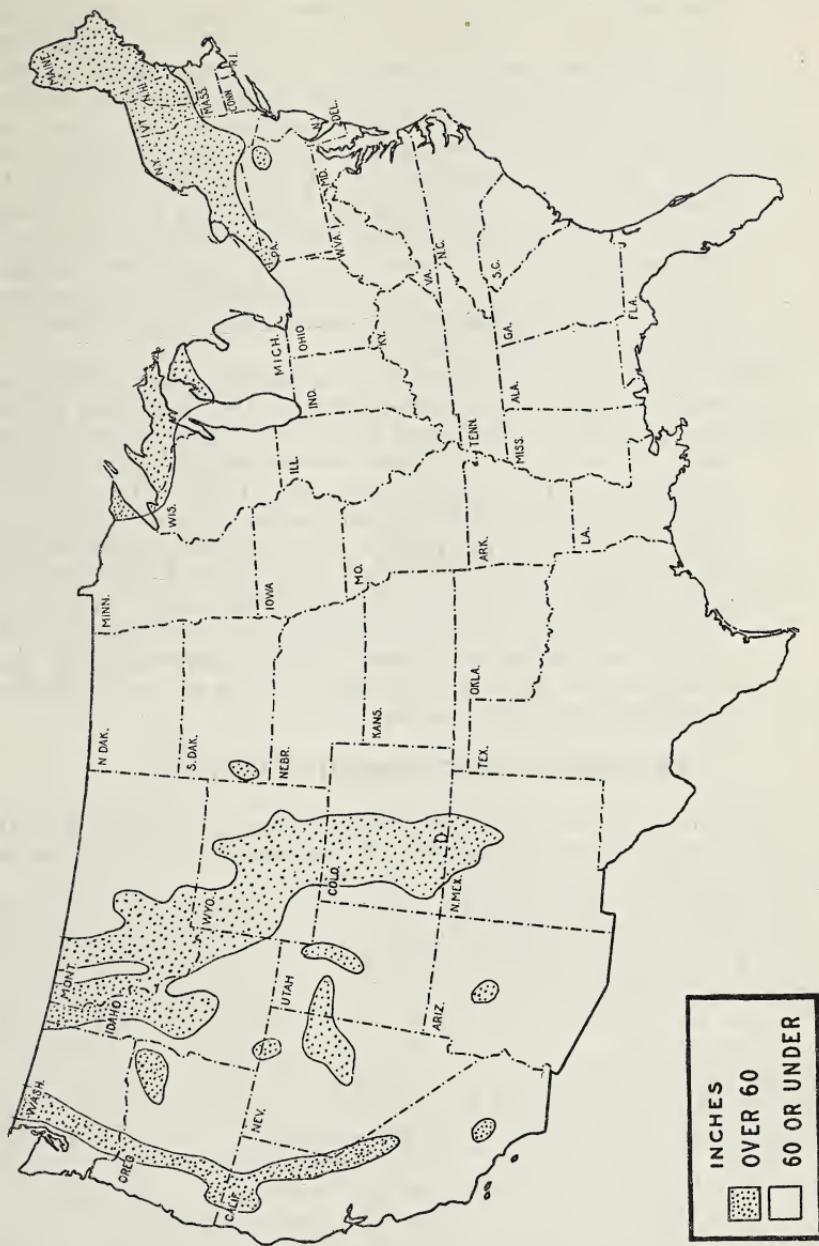


FIGURE 1.—Average annual snowfall (1899-1938).

11. *Light and ventilation.*—To provide adequate light and ventilation every home shall comply with the following:

- (a) Every habitable room shall have one or more windows with an aggregate glass area of not less than one-tenth of the floor area served by the windows or glazed openings, but not less than 12 square feet, except for kitchens, which shall have not less than 9 square feet. The aggregate openable area of the windows or of other openings to the outdoors shall be not less than 50 percent of the required glass area.
- (b) Every bathroom and every water-closet compartment shall have one or more windows or, when immediately under the roof, may have a ventilating skylight. The glass area shall be not less than one-tenth of the floor area served, but in no case less than 3 square feet. The aggregate openable area of the windows or of other openings to the outdoors shall be not less than 50 percent of the required glass area but not less than 3 square feet.
- (c) Basements and cellars shall have an aggregate openable glass area of not less than one-fiftieth of the floor area served.
- (d) All spaces between roofs and top floor ceilings where the roof slope is 3 inches in 12 inches or steeper shall have effective ventilation. This requirement may be met by installing two fixed louvres or vents, located in opposite gable ends near the ridge, each having a clear area of at least one six-hundredths of the total horizontal projected roof area.
- (e) Spaces under nonbasement dwellings shall have at least 2 vents that have a total ventilating area equivalent to  $\frac{1}{2}$  of 1 percent of the enclosed area, plus  $\frac{1}{2}$  square foot for each 25 linear feet of wall enclosing the area or the equivalent ventilation by other means.

### RECOMMENDED REQUIREMENTS

12. Some parts of the completed dwelling may be furnished at the site by other than the manufacturer of the house, and the following requirements are recommended for such work.

13. *Foundations.*—Foundations shall be in accordance with the requirements of Recommended Building Code Requirements for New Dwelling Construction BMS88, issued by the National Bureau of Standards. Foundations shall be made impervious to termites in areas where it has been established that termite infestation exists.

14. *Chimneys, flues, and vents.*—Heating and service water-heating equipment burning oil or solid fuel, and gas-fired heating equipment and service water heaters shall be connected to an effective flue. Gas-fired space heaters or floor furnaces shall be connected to an effective flue.

14a. Effective flue area shall be as recommended by the manufacturer of the equipment connected but not less than the combined area of the outlets (smoke or vent) of the connected equipment, but in no case less than 12 square inches. Effective flue area for fireplaces shall be not less than one-tenth of the area of the fireplace opening.

14b. Chimney height shall be as recommended by equipment manufacturer and not less than 2 feet above any portion of a structure within 15 feet of the chimney.

14c. Solid masonry chimneys with flue linings are acceptable for all fuels and shall have a cap to form wash from flue to outside edge with minimum thickness of 2 inches. Chimneys that are entirely or partly outside of exterior walls shall be securely anchored to structure at each floor line 6 feet or more above grade and at the upper ceiling or roof line.

- (1) Flue linings shall be of fire clay or other materials that meet requirements of the building code recommended by the National Board of Fire Underwriters; lining shall start at least 8 inches below the center line of smokepipe intakes; two flues may be grouped without withes provided joints of linings are staggered with a vertical distance between joints of not less than 7 inches; withes separating flues or groups of flues shall be at least  $3\frac{3}{4}$  inches thick.
- (2) When gas-fired equipment is connected, fire-clay flue linings with joints made of acid-resisting mortar or tile lining, bell and spigot type with bell end up, or other linings or chimneys meeting the requirements of the building code recommended by the National Board of Fire Underwriters shall be used; drains shall be provided to dispose of condensation.

14d. Other chimney flues or vents listed or approved by the Underwriters' Laboratories, Inc., are acceptable for use only with fuels for which they are approved. Installations including clearances shall be in accordance with requirements in Underwriters' Laboratories, Inc., Approval Report. For gas-fired equipment,

- (1) Provide means to dispose of condensation;
- (2) Vents shall be extended through roof as near ridge as practical with crossover not less than 30 degrees with the horizontal and with a height not less than 1 foot above the highest portion of any structure within 15 feet of vent;
- (3) Vent cap shall be designed to prevent downdraft under normal conditions of operation.

15. *Heating.*—The heat distribution system shall be so designed and installed that, when operating at design conditions, the output from the heat distribution devices shall not be less than the heat loss of the space served. The difference in temperature between any two rooms, measured at 5 feet 0 inch above the floor level at center of the rooms, shall not exceed 10 degrees F for overflow heaters and 5 degrees F for heating systems.

15a. The net output of the heating unit, which is the gross output less the allowances for distribution and pickup, and any other loads imposed shall be not less than the heat loss of the structure heated. The gross output and the allowances for distribution and pickup shall be determined by the applicable nationally recognized rating code or commercial standard.

15b. All oil-fired heating units shall conform to the applicable commercial standard. All gas-fired heating and cooking equipment furnished shall conform to the requirements of the American Gas Association.

15c. Space shall be provided within the dwelling for the heating unit or system and for the smoke pipe, with sufficient clearances for

maintenance and repair. Clearances shall also be provided for safety, determined by insulation of the heater and combustibility of walls, floor, and ceiling. Heat generated shall not raise the surface temperature of combustible walls, floor or ceiling above 160° F. National Board of Fire Underwriters Installation Standards shall be observed.

15d. Any confined space that encloses heating equipment shall be provided with fixed ventilation arranged to supply air from outside or from a permanently ventilated underfloor or attic space, or otherwise, to produce the equivalent of a duct with a free area at least equal to the free area of flues or vents to which the heating equipment is connected.

16. *Insulation.*—To promote the health and comfort and to reduce winter heating costs, all dwellings shall comply with the following requirements:

16a. Structures shall be provided with sufficient resistance to heat loss by insulation, or otherwise, so that the heat loss in Btu per hour of any furnished dwelling space, and the total heat loss in Btu per hour of the dwelling shall not exceed 60 times the floor area in square feet.<sup>1</sup>

16b. Heat loss shall be calculated according to the data and methods described in the current edition of the "Guide" of the American Society of Heating and Ventilating Engineers, and shall be based upon maintaining 70° F inside air temperature at 5 feet 0 inch above floor with the outside temperature as recommended in the "Guide" or as established by standard heating design practice for the locality in which the dwelling is to be erected. The temperature of unheated garages, ventilated crawl spaces, and attics shall be assumed to be at the outside design temperature. Weather stripping, caulking, storm windows, and storm doors furnished shall be credited with the reduction of heat loss they effect.

17. *Condensation control.*—The dwelling shall be designed and constructed so as to minimize condensation within any wall, floor, ceiling, or roof construction or within any unoccupied space (such as under floor and between roof and top floor ceiling) and to prevent prolonged condensation upon any interior surface exposed to view. This may be accomplished by the proper combination of the following means:

- (a) Fixed ventilation of habitable spaces installed so that occupants can not readily reduce its effectiveness.
- (b) Adequate thermal resistance of the construction.
- (c) Construction having vapor resistance on the warm side several times that of the cold side.
- (d) Effective ventilation of construction and of unoccupied spaces.

18. *Plumbing and sanitation.*—Plumbing installations shall comply with the recommended minimum requirements for plumbing set forth in Plumbing Manual BMS66, issued by the National Bureau of Standards.

19. *Electrical wiring.*—The electric installations shall conform to the recommendations of the current National Electrical Code.

<sup>1</sup> Floor area is the total area in square feet, measured at each principal floor level to the outside face of exterior walls, to the center line of walls separating dwelling units or structures, and to the outside face of walls or partitions enclosing finished spaces in attic or basement. Unfinished space shall not be included.

20. *Roofing*.—Roofing materials shall be applied in accordance with the manufacturer's directions. The type and method of applying roofing and flashing shall assure weathertightness for at least 10 years.

21. *Miscellaneous*.—Any other branches of work, including paint and painting, not specifically covered by this standard shall be in accordance with generally accepted and recognized trade practices.

### EFFECTIVE DATE

22. The standard is effective for new production from May 10, 1945.

### STANDING COMMITTEE

23. The following individuals comprise the membership of the standing committee, which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Each organization nominated its own representative. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Division of Trade Standards, National Bureau of Standards, which acts as secretary for the committee.

HARRY H. STEIDLE (chairman), Prefabricated Home Manufacturers' Institute, 1244 Shoreham Bldg., 15th and H Sts. NW., Washington, D. C.

JOHN A. STEWART, The Prebilt Co., Revere Beach Parkway, Revere 51, Mass.

JOHN PEASE, Pease Woodwork Co., Blue Rock and Turrill Sts., Cincinnati 23, Ohio.

H. ARTHUR TUCKER, Southern Mill & Mfg. Co., 525 S. Troost Ave. (P. O. Box 1087), Tulsa 1, Okla.

GEORGE A. POAG, George A. Poag Co., 703 Old First Bank Bldg., Fort Wayne, Ind.

KARL H. KETTELHUT, LaFayette Loan and Trust Bldg., W. LaFayette, Ind.

RICHARD F. VOELL, Office of the Administrator, National Housing Agency, 1600 Eye St. NW., Washington 25, D. C.

HOWARD L. SMITH, Federal Housing Administration, National Housing Agency, Washington 25, D. C.

FRANKLIN HARDINGE, JR., U. S. Savings & Loan League, 221 N. LaSalle St., Chicago, Ill.

STANLEY B. BAKER, City Hall, Topeka, Kansas, (Representing Building Officials Conference of America.)

MILTON T. MACDONALD, Trust Company of New Jersey, 35 Journal Square, Jersey City, N. J. (Representing American Bankers Association.)

JOHN CARSON, The Cooperative League of the U. S. A., 726 Jackson Place NW., Washington 6, D. C.

E. J. FRICKE, 47 Pennsylvania St., Indianapolis 9, Ind. (Representing National Cooperatives, Inc.)

CHARLES M. POTTER, Loan Guarantee Division, Veterans Administration, Vermont Ave. and H St. NW., Washington 25, D. C.

RAYMOND F. TALBERT, Pittsburgh Home Savings & Loan Assn., 436 Wood St., Pittsburgh, Pa.

REED B. COYLE, Arrott Bldg., Pittsburgh, Pa. (Representing Mortgage Bankers Association of America.)

CHESTER CROSSFIELD, Chief Building Inspector, Nashville, Tenn. (Representing Southern Building Codes Congress.)

Pacific Coast Building Officials Conference. Invited to name a representative.

## HISTORY OF PROJECT

24. On November 19, 1943, the Prefabricated Home Manufacturers' Institute requested the cooperation of the National Bureau of Standards in the establishment of a commercial standard for prefabricated homes. A preliminary draft of the proposed commercial standard was submitted on February 25, 1944, to manufacturers and a large number of organizations for their views and comment. All comment was carefully considered at a meeting held in Chicago on March 27, 1944. An adjusted draft was then prepared and submitted on September 27, 1944, to technical organizations, lending agencies, testing laboratories, building officials, and to all known interested manufacturers for further review and comment. The standard was then modified in accordance with the composite recommendations of those concerned and circulated on February 10, 1945, to the trade for written acceptance.

25. Upon receipt of official acceptances estimated to represent a satisfactory majority of the production by volume and in the absence of active valid opposition, the standard was promulgated on April 10, 1945, as Commercial Standard CS125-45.

## ACCEPTANCE OF COMMERCIAL STANDARD

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this commercial standard.

Date -----

Division of Trade Standards,  
National Bureau of Standards,  
Washington 25, D. C.

Gentlemen:

We believe that the Commercial Standard CS125-45 constitutes a useful standard of practice, and we individually plan to utilize it as far as practicable in the

Production<sup>1</sup> Distribution<sup>1</sup> Use<sup>1</sup> Testing<sup>1</sup>  
of prefabricated homes.

We reserve the right to depart from it as we deem advisable.

We understand, of course, that only those articles which actually comply with the standard in all respects can be identified or labeled as conforming thereto.

Signature of authorized officer -----  
(In ink)

—  
(Kindly typewrite or print the following lines)

Name and title of above officer -----

Organization -----  
(Fill in exactly as it should be listed)

Street address -----

City, zone, and State -----

<sup>1</sup> Underscore which one. Please see that separate acceptances are filed for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interests, trade papers, etc., desiring to record their general support, the words "General Support" should be added after the signature.

## TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices and the like.

2. *The acceptor's responsibility.*—The purpose of commercial standards is to establish for specific commodities, nationally recognized grades or consumer criteria and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the commercial standard where practicable, in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function performed by the Department of Commerce in the voluntary establishment of commercial standards on a Nation-wide basis is fourfold: first, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active, valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

## ACCEPTORS

26. The organizations listed below have individually accepted these grading es for use as far as practicable in the production, distribution, testing or use of prefabricated homes. In accepting the standard they reserved the right to depart therefrom as they individually deem advisable. It is expected that articles which actually comply with the requirements of this standard in all respects will be regularly identified or labeled as conforming thereto, and that purchasers will require such specific evidence of conformity.

### ASSOCIATIONS

#### (GENERAL SUPPORT)

Building Officials Conference of America, Inc., Washington, D. C.  
 Carolina Lumber & Building Supply Association, Charlotte, N. C.  
 Douglas Fir Plywood Association, Tacoma, Wash.  
 Massachusetts Building Commissioners & Inspectors Association, Inc., Lawrence, Mass.  
 National Hardwood Lumber Association, Chicago, Ill.  
 National Safety Council, Chicago, Ill.  
 Northeastern Wood Utilization Council, New Haven, Conn.  
 Prefabricated Home Manufacturers' Institute, Washington, D. C.  
 Red Cedar Shingle Bureau, Seattle, Wash.  
 Truck-Trailer Manufacturers Association, Inc., Washington, D. C.  
 West Coast Lumbermen's Association, Seattle, Wash.

### FIRMS

Abington Sanitary Manufacturing Co., Abington, Ill. (General support.)  
 Adkins & Co., E. S., Salisbury, Md.  
 Aetna Industrial Corporation, C. C. Coolbaugh & Son Co. Division, Gloucester City, N. J.  
 Akron Hardware Co., Long Island City, N. Y.  
 Allentown, City of, Allentown, Pa.  
 Allied Chemical & Dye Corporation, The Barrett Division, New York, N. Y.  
 Allied Housing Associates, Langhorne, Pa.  
 American Savings & Loan News, Cincinnati, Ohio. (General support.)  
 American Stove Co., Lorain, Ohio.  
 Associated Industries, Inc., San Francisco, Calif.  
 Associated Plywood Mills, Olympia, Wash.  
 Baldwin-Hill Co., Trenton, N. J. (General support.)  
 Baltimore, City of, Bureau of Buildings, Baltimore, Md.  
 Baltimore, City of, Bureau of Plans & Surveys, Baltimore, Md.  
 Bard Manufacturing Co., The, Bryan, Ohio.  
 Barnes Heater Co., Elkhart, Ind.  
 Bellingham Plywood Corporation, Bellingham, Wash.  
 Best Universal Lock Co., Inc., Indianapolis, Ind.  
 Birmingham, City of, Birmingham, Ala.  
 Blanchard Co., Baton Rouge, La.  
 Bonded Building Service, Brownsville, Tex.  
 Bondrite Manufacturing Co., St. Louis, Mo.  
 Borg-Warner Corporation, Norge Heating & Conditioning Division, Detroit, Mich. (General support.)  
 Bradshaw, H. W., Watseka, Ill.  
 Briggs Bituminous Composition Co., Philadelphia, Pa.  
 Brown-Graves Co., Akron, Ohio.  
 Bruce Co., E. L., Memphis, Tenn.  
 Brust & Brust, Milwaukee, Wis.  
 Bryant Associates, Inc., Thomas, Lafayette, La.  
 Builders Supply Co., Superior, Wis.  
 Burke Millwork Co., Seattle, Wash.  
 Calbar Paint & Varnish Co., Philadelphia, Pa.  
 California Builders Supply Co., Oakland, Calif.

California Door Co., The, Los Angeles, Calif.  
 Cameron Lumber Co., Inc., Newburgh, N. Y.  
 Carey Manufacturing Co., The Phillip, Cincinnati, Ohio.  
 Carr, Adams & Collier Co., Dubuque, Iowa. (General support.)  
 Casein Co. of America, Seattle, Wash.  
 Celotex Corporation, The, Chicago, Ill.  
 Central Building Supply, Inc., Baltimore, Md.  
 Central Glass Co., Inc., Evansville, Ind.  
 Central Lumber Co., Stockton, Calif.  
 Century, Engineering Corporation, Cedar Rapids, Iowa.  
 Champion Hardware Co., Geneva, Ohio.  
 Charlotte Lumber & Manufacturing Co., Charlotte, N. C.  
 Charter Oak Stove & Range Co. (Subsidiary of Reynolds Metals Co.), Richmond, Va.  
 Chicago Lock Co., Chicago, Ill.  
 Chicago Spring Hinge Co., Chicago, Ill. (General support.)  
 Clark Stek-O Corporation, Rochester, N. Y.  
 Coburn Trolley Track Co., Holyoke, Mass.  
 Colvin-Rock-Wool Co., Bedford, Ind.  
 Commonwealth Plywood Co., Ltd., Ste. Therese, Que., Canada.  
 Condensation Engineering Corporation, Chicago, Ill.  
 Continental Steel Corporation, The Superior Sheet Steel Co., Division, Canton, Ohio.  
 Cumberland Homes, Inc., Middlesboro, Ky.  
 Curtis Co's, Inc., Clinton, Iowa.  
 Cuyahoga Falls, City of, Cuyahoga Falls, Ohio.  
 Des Moines, City of, Building Department, Des Moines, Iowa.  
 Detroit, City of, Department of Buildings & Safety Engineering, Detroit, Mich.  
 Detroit Hardware Manufacturing Co., Detroit, Mich.  
 Detroit Testing Laboratory, The, Detroit, Mich. (General support.)  
 District of Columbia, Government of the, Washington, D. C.  
 Dixie Asphalt Products Corporation, Savannah, Ga.  
 Domino Homes, Lumberton, N. C.  
 Drycemble Corporation, South Gate, Calif.  
 Duplex, Inc., Los Angeles, Calif.  
 Dyker Building Co., Inc., New York, N. Y.  
 Eljer Co., Ford City, Pa. (General support.)  
 Elkin, Bernard P., Forest Hills, N. Y.  
 Elliott Bay Mill Co., Seattle, Wash.  
 Empire Housing Corporation, New York, N. Y.  
 Estellite Co., Hoosick Falls, N. Y. (General support.)  
 Evans Products Co., Los Angeles, Calif.  
 Falconer Plate Glass Corporation, Falconer, N. Y.  
 Fetco Lumber Co., Jamestown, N. Dak.  
 Field Detroit Co., Detroit, Mich.  
 Ford Lumber Co., Ivon R., McDonough, N. Y.  
 Frantz Manufacturing Co., Sterling, Ill.  
 GBH-Way Homes, Inc., Walnut, Ill.  
 Gem Trailer Co., Twin Falls, Idaho.  
 General Millwork Corporation, Utica, N. Y.  
 General Panel Corporation, New York, N. Y.  
 Gillinder Brothers, Inc., Port Jervis, N. Y.  
 Grand Rapids Hardware Co., Grand Rapids, Mich. (General support.)  
 Green Lumber Co., The, Laurel, Miss.

Greensboro, City of, Greensboro, N. C.  
 Green's Ready-Built Homes, Rockford, Ill.  
 Greenwood Engineering Co., Inc., Baltimore, Md.  
 Grimshaw Co., W. R., Tulsa, Okla.  
 Gunnison Homes, Inc. (Subsidiary of United States Steel Corporation), New Albany, Ind.  
 Hagerman Construction Co., Ft. Wayne, Ind.  
 Hagerstown, The Mayor & Council of, Hagerstown, Md.  
 Haggerty Co., Cohasset, Mass.  
 Hall, Inc., Wm. Barnes, Baltimore, Md.  
 Harbor Plywood Corporation, Chicago, Ill.  
 Hardin & Ramsey, Atlanta, Ga.  
 Harman Corporation, Wm. H., Philadelphia, Pa.  
 Harnischfeger Corporation, Port Washington, Wis.  
 Hartung Co., F. L., Seattle, Wash.  
 Hawaiian Cane Products, Ltd., San Francisco, Calif.  
 Hawkins Lumber & Warehouse Co., Boston, Mass.  
 Hays Manufacturing Co., Erie, Pa.  
 Hines Lumber Co., Edward, Chicago, Ill.  
 Hodgson Co., The, Boston, Mass.  
 Holly Heating & Manufacturing Co., South Pasadena, Calif.  
 Home Building Corporation, Kansas City, Mo.  
 Home Finance Co., Boise, Idaho.  
 Horsley Co., Inc., The, New York, N. Y.  
 Houston, Better Business Bureau of, Houston, Tex.  
 Houston Ready-Cut House Co., Houston, Tex.  
 Humphrey Co., H. B., New York, N. Y.  
 Illinois Lumber Manufacturing Co., Cairo, Ill.  
 International Oil Burner Co., St. Louis, Mo.  
 Interstate Sash & Door Co., The, Canton, Ohio.  
 Jackson Co., The, North St. Paul, Minn.  
 Jamestown Veneer & Plywood Co., Jamestown N. Y.  
 Jasper Wood Products Co., Inc., Jasper, Ind.  
 Johnson Co., S. T., Oakland, Calif.  
 Kalamazoo, City of, Building Department, Kalamazoo, Mich.  
 Kane Manufacturing Co., T. B., Chicago, Ill.  
 Kees Manufacturing Co., F. D., Beatrice, Nebr.  
 Kellogg Lumber Co., Denver, Colo.  
 Keystone Roofing Manufacturing Co., York, Pa.  
 Kimball & Wilson, Inc., Detroit, Mich.  
 Kimberly-Clark Corporation, Neenah, Wis. (General support.)  
 Klinger Dri-Built Manufacturing Co., San Antonio, Tex.  
 Kneeland Bigelow Dist. Co., Bay City, Mich.  
 Knight Electrical Products Corporation, Brooklyn, N. Y.  
 Kolb Co., Inc., M. B., New York, N. Y.  
 Korth Oil Burner Corporation, Roselle Park, N. J.  
 Kres-Kno-Stamm Manufacturing Co., New York, N. Y.  
 Lamneck Products, Inc., Middletown, Ohio.  
 Laucks, Inc., Lockport, N. Y. (General support.)  
 Lennox Furnace Co., Marshalltown, Iowa.  
 Lewis Manufacturing Co., Bay City, Mich.  
 Lincoln Park Development, Bethlehem, Pa.  
 Loetscher & Burch Manufacturing Co., Des Moines, Iowa.  
 Long Beach, Calif., Inc., Better Business Bureau of, Long Beach, Calif.  
 Long-Bell Lumber Co., The, Longview, Wash.  
 Long-Bell Lumber Co., The, Sash & Door Division, Oklahoma City, Okla.  
 Lorene Mill Co., South Hill, Va.  
 Lumber Products, Inc., Portland, Oreg.  
 Mansfield Sanitary Pottery, Inc., Perrysville, Ohio. (General support.)  
 Marsh & Truman Lumber Co., Chicago, Ill.  
 Mason & Sons, Inc., A., Peru, N. Y.  
 McFarland, Douglas, Los Angeles, Calif. (General support.)  
 McKeown Brothers Co., Chicago, Ill.  
 Midwest Houses, Inc., South Kearny, N. J.  
 Midwest Housing Corporation, Janesville, Wis.  
 Miller & Co., Worcester, Mass.  
 Mineral Insulation Co., Chicago Ridge, Ill.  
 Minnesota Linseed Oil Paint Co., Minneapolis, Minn.  
 Mitchell Powers Hardware Co., Bristol, Va. (General support.)  
 Monarch Metal Weatherstrip Corporation, St. Louis, Mo.  
 Moore & Co., Dallas, Tex.  
 Morell, N. L., Bethlehem, Pa.  
 Morgan Millwork Co., Baltimore, Md.  
 Morrison-Merrill & Co., Salt Lake City, Utah.

Mueller Furnace Co., L. J., Milwaukee, Wis.  
 National Airoil Burner Co., Philadelphia, Pa.  
 National Gypsum Co., Buffalo, N. Y.  
 National Homes Corporation of Indiana, Lafayette, Ind.  
 National Rock Wool Sales, Inc., Largo, Ind.  
 Neal-Blun Co., Savannah, Ga.  
 Nettleton & Baldwin, Seattle, Wash.  
 New Hampshire, University of, Engineering Experiment Station, Durham, N. H.  
 New Orleans, Inc., Better Business Bureau of, New Orleans, La. (General support.)  
 Nicholson Realty Co., Boulder, Colo.  
 Norfolk, City of, Norfolk, Va.  
 Northern Controlled Heat Co., Inc., Watertown, N. Y.  
 Northwest Fabricators, Albany, Oreg.  
 Northwest Wood Products Co., Wonewoc, Wis.  
 Norwood Manufacturing Co., The, Norwood, Ohio.  
 Nu-Way Corporation, The, Rock Island, Ill.  
 Ohio Foundry & Manufacturing Co., The, Steubenville, Ohio. (General support.)  
 Oil Electric Co., Minneapolis, Minn.  
 Paducah Sash & Door Co., Paducah, Ky.  
 Page & Hill Co., Minneapolis, Minn.  
 Paine Lumber Co., Ltd., Oshkosh, Wis.  
 Palace Corporation, Flint, Mich.  
 Paraffine Co.'s, Inc., The, San Francisco, Calif.  
 Paragon Oil Burner Corporation, Brooklyn, N. Y.  
 Paragon Utilities Co., Inc., New York, N. Y.  
 Pease Woodwork Co., Cincinnati, Ohio.  
 Peerless Built-In Fixture Co., Berkeley, Calif.  
 Peerless Housing Co., New York, N. Y.  
 Pence Industries, Joliet, Ill.  
 Perkins Wheeler & Will, Chicago, Ill.  
 Pier Furniture Co., Lockport, N. Y.  
 Pittsburgh Plate Glass Co., Pittsburgh, Pa.  
 Ply-Wel Industries, Oakland, Calif.  
 Plywoods-Plastics Corporation, Hampton, S. C.  
 Poag Co., Geo. A., Ft. Wayne, Ind.  
 Poe Co., The C. W., Cleveland, Ohio.  
 Porcelain Steel Buildings Co., Columbus, Ohio.  
 Porter-Hadley Co., Grand Rapids, Mich.  
 Porter Mirror Co., Logan, High Point, N. C.  
 Portland, City of, Portland, Oreg.  
 Prebuilt Co., The, Revere, Mass.  
 Pre-Fab Building Co., Berkeley, Calif.  
 Prefabricated Lumber Products, Inc., Tacoma, Wash.  
 Prefabricated Products Co., Seattle, Wash.  
 Prefabrication Engineering Co., Portland, Oreg.  
 Puget Supply Co., Seattle, Wash.  
 Quigley Co., J. R., Gloucester City, N. J.  
 Rastetter & Sons Co., Louis, Fort Wayne, Ind. (General support.)  
 Red River Lumber Co., The, Chicago Yards, Chicago, Ill. (General support.)  
 Riker Lumber Co., The, Lansing, Mich.  
 Rite Hardware Manufacturing Co., Glendale, Calif.  
 Riverton Lime & Stone Co., Inc., Riverton, Va. (General support.)  
 Rock Fleece Co., El Paso, Tex.  
 Roof Structures, Inc., Webster Groves, Mo.  
 Rounds & Porter Co., Wichita, Kans.  
 Royalton Rug & Carpet Co., Chicago, Ill.  
 Rudinger, Inc., C. R., S. Kearny, N. J.  
 St. Paul & Tacoma Lumber Co., Tacoma, Wash.  
 Salem Lime & Soda Co., Inc., Salem, Ind.  
 Schell-Sasse Manufacturing Co., Jacksonville, Fla.  
 Scott Graff Co., Duluth, Minn.  
 Scott Lumber Co., The, Wheeling, W. Va.  
 Scranton Better Business Bureau, Scranton, Pa. (General support.)  
 Segelke & Kohlhaus Co., La Crosse, Wis. (General support.)  
 Seiffert Co., The H. O., Everett, Wash.  
 Seitzler & Co., W. H., Chicago, Ill.  
 Shelby Spring Hinge Co., The, Shelby, Ohio.  
 Simons, Inc., Minneapolis, Minn.  
 Sloan Lumber Co., Ft. Worth, Tex.  
 Souhegan Mills, Wilton, N. H.  
 Southern Building Codes Congress, Birmingham Ala.  
 Southern Mill & Manufacturing Co., Tulsa, Okla.  
 Southwestern Sash & Door Co., Joplin, Mo.  
 Special Materials, Oakland, Calif.  
 Spiegel, Inc., Chicago, Ill.  
 Spokane Sash & Door Co., Spokane, Wash.  
 Springfield, City of, Springfield, Mo.  
 Standard Fabrication, Ltd., Richmond, Va.

Stanley Works, The, New Britain, Conn. (General support.)  
Stephens Chandelier Co., The, Kansas City, Mo.  
Structiform Engineering Co., Chicago, Ill.  
Structures, Inc., Chicago, Ill.  
Study, Farrar & Majers, St. Louis, Mo.  
Sundstrand Engineering Co., Rockford, Ill.  
Sundstrand Machine Tool Co., Rockford, Ill.  
Superior Steel Building Co., Detroit, Mich.  
Syncro-Flame Burner Corporation, Brockton, Mass.  
Takapart Products Co., Freeport, N. Y.  
Taylor Sash & Door Co., Pensacola, Fla.  
Teachout Sash Door & Glass Co., Dearborn, Mich.  
Technical Glass Co., Inc., Los Angeles, Calif.  
Tex-Rock Insulation Co., Temple, Tex. (General support.)  
Throop-Martin Co., The, Columbus, Ohio.  
Toombs & Co., Springfield, Mo.  
Trenton Potteries Co., The, Trenton, N. J. (General support.)  
Truscon Steel Co., Youngstown, Ohio.  
Tufcrete Co., Des Moines, Iowa.  
Upson Co., The, Lockport, N. Y.  
Vetter Manufacturing Co., Stevens Point, Wis.  
Washington Hardware Co., Tacoma, Wash.  
West Side Manufacturing Co., Milwaukee, Wis.  
Western Door & Sash Co., Oakland, Calif.  
Whittier Lumber & Millwork Co., Newark, N. J.

Williams & Hunting Co., Cedar Rapids, Iowa.  
Williams Oil-O-Matic Heating Corporation, Bloomington, Ill. (General support.)  
Willingham & Co., Chattanooga, Tenn.  
Wilmington, City of, Wilmington, Del. (General support.)  
Wilson, Wm. M., Los Angeles, Calif.  
Winston-Salem, City of, Winston-Salem, N. C.  
Wisconsin Oil Burner Co., Madison, Wis.  
Wood Products Magazine, Chicago, Ill. (General support.)  
York Mirror & Glass Co., York, Pa.  
Zimmerman Plumbing Supply Co., Inc., Staten Island, N. Y.

#### U. S. GOVERNMENT

Federal Housing Administration, Omaha, Nebr., and Spokane, Wash.  
Federal Public Housing Authority, Region II, New York, N. Y.  
Home Owners' Loan Corporation, New York, N. Y.  
Justice, Department of, Bureau of Prisons, Construction Division, Washington, D. C.  
National Housing Agency, Office of the Administrator, Washington, D. C. (General support.)  
War Department, Washington, D. C.  
War Production Board, Washington, D. C.

